REMARKS

I. Status of the Claims and the Rejections

Claims 20 and 25 were rejected under 35 U.S.C. § 112 for alleged indefiniteness. More specifically, the claims were rejected for purported lack of clarity as to the fluid isolation recited in independent claim 16. Applicants have canceled claim 25 and amended claim 16 to recite that the fluid isolation is maintained "between the first ends and the second ends of the hollow chambers." This new recitation clarifies when and where the fluid isolation is maintained. Applicants respectfully request that the rejection of claim 20 be withdrawn.

Substantively, claims 1, 2, 9, 14-18, 24 and 25 were rejected for alleged lack of novelty under 35 U.S.C. § 102 based on Howard U.S. Patent No. 4,819,720 ("Howard"). Claims 1, 2, 4, 5, 9, 13-20, 24 and 25 were rejected for alleged obviousness under 35 U.S.C. § 103 based on Howard in combination with the Enlisted Aviation Warfare Specialist C-130 Specific Tutorial ("EAWS"), and Messana U.S. Patent No. 6,883,590 ("Messana"). Claims 6-8, 21 and 22 were rejected for alleged obviousness under 35 U.S.C. § 103 based on a combination of Howard, EAWS, Messana, and Monfraix U.S. Patent No. 6,058,725 ("Monfraix"). Claims 10-13 and 23 were rejected for alleged obviousness under 35 U.S.C. § 103 based on a combination of Howard, EAWS, Messana, and Wilson U.S. Patent Application Publication No. 2002/00565787 ("Wilson"). Applicants respectfully traverse these rejections.

However, Applicants have amended independent claims 1 and 16 to further clarify the subject matter regarded as patentable. Applicants have also amended claims 2, 4, 5, 7, 10, 14, 17 and 19-23; canceled claims 18 and 25; and added new claims 26 and 27 in this response. In view of these amendments and the following remarks, Applicants respectfully request reconsideration and allowance.

II. Claims 1, 2, 9, 14-17 and 24 are Novel

A. The Claims

Independent claim 1 recites an aircraft floor heating including "an aircraft with a fuselage having a forward cockpit section and a cabin section located aft of the cockpit section and extending along the length of the aircraft." The cockpit section further includes a cockpit and an avionics bay containing electronic equipment. The aircraft further includes a floor within the cabin section made up of heatable panels defining a plurality of first hollow chambers, and a feed line providing fluid communication between the avionics bay and the first hollow chambers. Each of the first hollow chambers includes a first end in fluid communication with the feed line and a second end aft of the cockpit section, with "the second ends of the first hollow chambers being in fluid communication with one of (a) the cabin section, and (b) the outside of the aircraft." Claims 2, 9, 14 and 15 depend from independent claim 1 and recite additional features, such as the first hollow chambers extending in a longitudinal direction of the aircraft, as recited in claim 2.

Independent claim 16 recites a method for heating the floor of an aircraft having a forward cockpit section and a cabin section located aft of the cockpit section, the cockpit section including a cockpit and an avionics bay having electronic equipment. The method includes "conveying air over the electronic equipment in the avionics bay to cool the electronic equipment and to warm the conveyed air, thereby to form warm waste air" and "conveying the warm waste air aftwardly from the cockpit section to a plurality of hollow chambers that reside below a floor of the cabin section...thereby to heat the floor of the cabin section." Additionally, the method includes "maintaining fluid isolation between the warm waste air conveyed in the hollow chambers and the cabin section of the aircraft between the first ends and the second ends of the hollow chambers" and venting, via the second ends of the hollow chambers, the warm waste air

to either the cabin section or the outside the aircraft. Claims 17 and 24 depend from independent claim 16 and recite additional features, such as generating a forced flow in the hollow chambers (claim 24).

B. The Deficiencies of the Cited Prior Art

The Office Action states that Howard discloses each element of independent claims 1 and 16. Howard is directed to a skin heat exchanger for use on an aircraft, as shown in Figures 2 and 3. The aircraft includes avionics equipment (13) located in a container (15) near the front of the aircraft. Warm waste air is forced with a fan (17) from the container (15) towards a plenum (35) at the bottom of the aircraft. From there, the warm waste air travels into an envelope (19) defined between a liner (25) and the aircraft fuselage skin (23). After the warm waste air cools by traveling through the envelope (19), the cooled air is collected in a collector duct (29) and delivered back to the container (15). Thus, Howard discloses a closed-loop system for cooling avionics equipment at the front end of an aircraft (*see* Figure 2). However, Howard is deficient with respect to claims 1 and 16.

The Office Action claims that the envelope (19) is formed by a number of "hollow chambers" having first ends and second ends. In contrast, claims 1 and 16 recite that the second ends of the hollow chambers are located distally of the first ends, and that the hollow chambers are located in a floor of a cabin section extending along the length of the aircraft. As shown in Figure 2 of Howard, the envelope (19) is only located at a front end of an aircraft, and the alleged "second ends" are not located distally of the alleged "first ends." The envelope (19) also only extends to the bulkhead (30) rather than extending along a length of the fuselage of the aircraft.

Furthermore, claims 1 and 16 require that the second ends of the hollow chambers vent the air traveling through the hollow chambers to either the cabin section or the outside of

the aircraft. Howard specifically teaches that it is desirable for the avionics equipment to be cooled in a closed loop system for various reasons, including reducing aircraft drag and possible contamination of the avionics equipment (Col. 2, lines 22-52). Considering that Howard requires this closed loop system, it is impossible for Howard to teach that the envelope (19) vents the air to a cabin section or outside the aircraft.

For at least these reasons, Howard fails to disclose each feature of independent claims 1 and 16. Each of claims 2, 9, 14, 15, 17 and 24 depends from one of independent claims 1 and 16, and recites a unique combination of features not disclosed by Howard, for at least the same reasons set forth above with respect to claims 1 and 16. Applicants respectfully request that the rejection of claims 1, 2, 9, 14-17 and 24 be withdrawn.

III. Claims 1, 2, 4-17 and 19-24 are Not Obvious

A. The Claims

As described above, independent claim 1 recites aircraft floor heating and independent claim 16 recites a roughly analogous method of heating a floor in an aircraft. Each of the independent claims recites a forward cockpit section, a cabin section aft of the cockpit section and extending along the length of the aircraft, and a plurality of hollow chambers formed in a floor of the cabin section. The hollow chambers have first ends in fluid communication with electrical equipment in an avionics bay of the cockpit section, and second ends in fluid communication with either the cabin section or the outside of the aircraft. Thus, warm waste air which originated in the avionics bay can be delivered through the hollow chambers to heat the floor of the cabin section. Claims 2, 4-15, 17 and 19-24 depend from one of the independent claims and recite additional features of the floor heating or the method. For example, claims 4

and 19 further recite a cargo door having heatable panels, the panels being in fluid communication with the second ends of the hollow chambers.

B. The Deficiencies of the Cited Prior Art

EAWS is directed to a cargo transport aircraft, and only broadly discloses that a ducting system may be located under the cargo compartment floor to heat the floor (section 201.1.7). There is no explanation how or where this ducting system receives heated air, or where it conveys the heated air. The Office Action states that it would have been obvious to use the heating panels disclosed in Messana as the ducting system in EAWS. The heating panels of Messana include coiled pipes (3) inserted into cavities milled into plasterboard panel (7). As shown in Figure 3, the coiled pipes (3) travel back and forth across the width of each panel (7). The Office Action then admits that the EAWS and Messana combination fails to teach the use of warm waste air produced by cooling electronic equipment in an avionics bay. Nevertheless, the Office Action states that it would have been obvious to combine the avionics container (15) and envelope (19) of Howard with the EAWS and Messana combination to arrive at the current claims. However, this combination of references fails for multiple reasons.

One of ordinary skill in the art would not have combined Howard with EAWS and Messana in the manner suggested. As discussed above, Howard is directed to a closed loop system where heat is dissipated from warm waste air to the exterior of an aircraft fuselage, rather than to a floor in a cabin section. Modifying the Howard system to vent the warm waste air into a cabin section would undermine the primary benefits of the closed loop system. It is not obvious to combine references in such a way as to undermine the benefits taught by one of the references, yet that is exactly what the Office Action does. Thus, the combination of Howard with EAWS and Messana is improper, and the rejection of claims 1 and 16 must fail.

Even if the cited references were combinable, the resulting system would still fail to include all the features of independent claims 1 and 16. There is no teaching in any of the cited references for a hollow chamber having a first end in fluid communication with a cockpit section and a second end distal of the first end and in fluid communication with a cabin section or the outside of the aircraft. In fact, none of the references provides an element for venting the warm waste air overboard after heating a floor of a cabin section. Furthermore, the plasterboard panels (7) disclosed in Messana are appropriate for walls and ceilings, but not as load-bearing floor panels (Col. 1, lines 4-10). Claim 1 also requires that the hollow chambers be formed integrally in the panels, but the coiled pipes (3) are added separately to the plasterboard panels (7) and are therefore not integral.

With respect to claims 4 and 19, the cited combination is deficient for additional reasons. Claims 4 and 19 recite a cargo door having panels which are in fluid communication with the hollow chambers in the floor of the cabin section. The Office Action concludes that it would have been obvious "to arrange an independent heating circuit on the cargo ramp of the C-130 as well, to prevent icing and to provide even heating of the enclosed cargo area" (Office Action, page 7). However, EAWS simply teaches "a ducting system under the cargo compartment floor" and nothing more, while Messana and Howard are completely silent as to cargo doors on an aircraft. There is absolutely no indication in EAWS or any of the cited references that would provide the impetus for adding an independent heating circuit or heating panels to the cargo door, let alone putting those panels into fluid communication with the hollow chambers.

For at least these reasons, claims 1 and 16 are allowable over EAWS, Messana, and Howard. Claims 2, 4-15, 17 and 19-24 recite unique combinations of features also not

disclosed by the cited combination of references. Applicants respectfully request that the rejection of claims 1, 2, 4-17 and 19-24 be withdrawn.

IV. New Claims 26 and 27 are Allowable

Applicants have added new claims 26 and 27 in this response, each depending from one of independent claims 1 and 16. Claims 26 and 27 further recite that the floor of the cabin section is flat and substantially horizontal. Claims 26 and 27 are allowable over Howard and the other cited references for at least the reasons discussed above with respect to claims 1 and 16. Additionally, the Office Action states that the flexible liner cover (36) of the liner (25) defining the envelope (19) is the claimed "floor." The liner cover (36) is clearly arcuate so that the envelope (19) can closely follow the surface of the aircraft fuselage and force heat exchange from the warm waste air to the exterior of the aircraft. Thus, Howard fails to disclose a flat and substantially horizontal floor, as recited in claims 26 and 27.

Applicants respectfully request an allowance for claims 26 and 27.

V. Conclusion

Based on the amendments to the claims and these remarks, Applicants respectfully assert that all present claims are in condition for allowance, and respectfully request an allowance without further delay. In accordance with a telephone conversation with the Examiner on January 20, 2010, Applicants respectfully request that the Examiner call the undersigned attorney to address any questions regarding moving this case towards allowance, prior to the issuance of an advisory action.

It is believed that no fee is due for this filing. If any fee is deemed due, consider this as an authorization to charge Deposit Account 23-3000 therefore.

Respectfully submitted,

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Date

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